CLIMATOLOGICAL DATA FOR AUGUST, 1913.

DISTRICT NO. 11, CALIFORNIA.

Local Forecaster G. H. WILLSON, Acting District Editor.

GENERAL SUMMARY.

August, 1913, was not at all like the usual August in California. Instead of the normal dry and warm weather with an abundance of sunshine throughout the great valley and mountain regions, the weather while warm was sultry and often somewhat oppressive, with less than the usual sunshine, and there were numerous thunderstorms and showers. Along the coast there was a marked absence of the usual cool fogs and instead a large number of warm and sunny days. With the exception of August, 1901, the mean temperature for the entire State was the highest since the State-wide records began in 1897. There were two periods of very warm weather, one from the 5th to the 8th, and the other and longer one from the 20th to the 30th. No maximum temperature records were broken during these warm spells, although they ranged from 100° to 112° in the interior. There was a cool period from the 10th to the 18th, when most of the minimum temperatures occurred.

The average rainfall for the entire State was nearly four times the normal, and was the greatest recorded for any August. A notable feature of the month was the large number of thunderstorms in the mountain regions, especially in the extreme northeastern portion and in the southern Sierra and Cuyamaca Mountains. The heaviest rainfalls occurred at the higher levels, where it is impossible to maintain stations, but visitors to the regions reported the thunderstorms more numerous and the rains heavier than any they had ever before experienced in those localities. The following notes are taken from some of the cooperative observers' reports:

Alturas.—There were 10 thunderstorms during the month and nearly four times the usual rainfall.—Prof. C. B. TOWLE.

Campo.—Thunderstorms have occurred in the higher mountain belt throughout the entire month. In some localities the rainfall has amounted to 6 inches in a week. It was the wettest August in years.—A. CAMPBELL.

Glennville.—Thunderstorms occurred daily from the 20th to the end of the month. On the 27th, 1.40 inches of rain fell in 40 minutes.—C. H. LIKELY.

Hot Springs.—On the 27th, there were heavy thunderstorms and cloud-bursts all along the summit.—A. B. PATTERSON.

TEMPERATURE.

The mean temperature for the State was 2° above the normal. The following table gives the means and departures for each August from 1897 to 1913, inclusive:

Year.	Mean.	Departure.	Year.	Mean.	Departure.
	°F.	°F.		°F.	°F.
1897	73.9	+1.1	1906	73.6	+0.8
1898	74.5	+1.7	1907	71.0	−1.8
1899	70.8	−2.0	1908	73.3	+0.5
1900	71.0	−1.8	1909	72.1	−0.7
1901	75.6	+2.8	1910	72.5	−0.3
1902	71.8	−1.0	1911	70.1	−2.7
1903	72.6	−0.2	1912	70.2	−2.6
1904	73.9	+1.1	1913	74.8	+2.0
1905	73.4	+0.6			

The highest temperature recorded at any station was 124° at Greenland Ranch on the 24th. The lowest temperature was 23° at Greenville on the 15th, which is 3° higher than the lowest recorded during the same month last year.

PRECIPITATION.

The following table gives the average precipitation and departure from the normal for each August from 1897 to 1913, inclusive:

Year.	Average.	Departure.	Year.	Average.	Departure.
	Inches.	Inches.		Inches.	Inches.
1897	0.03	−0.05	1906	0.13	+0.05
1898	0.02	−0.06	1907	0.11	+0.03
1899	0.11	+0.03	1908	0.12	+0.04
1900	0.02	−0.06	1909	0.19	+0.11
1901	0.12	+0.04	1910	0.01	−0.07
1912	0.06	−0.02	1911	0.00	−0.08
1903	0.02	−0.06	1912	0.06	−0.02
1904	0.17	+0.09	1913	0.30	+0.22
1905	0.03	−0.05			

The rainfall was unusually heavy, especially in the mountain districts where heavy thunderstorms occurred frequently. The greatest recorded monthly amount was 3.63 at Springville, and the greatest 24-hourly amount was 1.61 at Glennville. There was no rainfall at 63 stations.

The following table gives the hours of sunshine and the percentages of the possible:

Stations.	Hours.	Per cent of possible.	Stations.	Hours.	Per cent of possible.
Eureka	203	48	Sacramento	389	92
Fresno	374	89	San Diego	318	77
Los Angeles	322	78	San Francisco	295	70
Mount Tamalpais	370	88	San Jose	357	85
Red Bluff	371	87	San Luis Obispo	322	77

NOTES ON THE RIVERS OF THE SACRAMENTO AND LOWER SAN JOAQUIN WATERSHEDS DURING THE MONTH OF AUGUST, 1913.

By N. R. TAYLOR, Local Forecaster.

Sacramento watershed.—All streams in the drainage basin of the Sacramento continued to fall slowly during the month and were lower generally than during any preceding August of which there is a record.

The Sacramento River itself was probably the lowest that has ever been recorded during the month in question. At Kennett it was 0.9, Colusa, 0.4, and Sacramento City, 0.3 foot below the lowest average stages ever recorded during any period. At Sacramento City an extreme low-water stage of 3.3 feet was reached on the 30th, which is 0.8 foot below any authentic record during the past 50 years.

The tidal influence was felt in the Sacramento for about 10 miles above the mouth of the American and, on several days, amounted to as much as 1.5 feet at Sacramento City.

Some rain fell in the high regions of the Sierra Nevada, and a few light showers occurred in parts of the valley floor, but in no case was there any effect in the run-off noted.

Numerous sand bars were uncovered in the Sacramento above Sacramento City. Below the city, however, there was little or no interruption in navigation on account of low water, which indicates that the river below the mouth of the American has scoured since the low-water season of 1912.

Lower San Joaquin watershed.—The extreme low-water stages for this watershed were reached during the last decade of the preceding month. Since then there has been little change, except that there was a slight rise in the Tuolumne River on the 30th, due to heavy rains in the upper reaches of that stream. There was no rain along the course of the trunk stream or in the lower reaches of its tributaries.

NOTES ON STREAMS AND WEATHER OF THE UPPER SAN JOAQUIN WATERSHED.

By W. E. BONNETT, Local Forecaster.

The streams of the Upper San Joaquin watershed continued at very low stages until near the close of the month when rises unusual for this time of the year occurred in all of them. In the Kaweah the rise amounted to 2 feet, in the Kings, 3.2 feet, and about the same amount in the San Joaquin itself, while the Merced showed a rise of 0.7 foot.

In the valley floor the rainfall was not considerable, but rains in excessive amounts occurred in the mountains, especially from the 21st to the end of the month, when they were of daily occurrence. This resulted in the unusual phenomenon of the streams running full for several days at a time in a season of scant water supply and at a time of the year when the streams ordinarily are at extremely low stages. This altogether unexpected addition to the water supply was quite welcome, and will make an additional cutting of alfalfa, which otherwise would not have been obtained on lands dependent on ditch water for irrigation.

The temperature for the month was considerably above the normal, the excess being wholly due to high minima, the persistent unsettled condition of the weather and the humid state of the air preventing the normal nocturnal radiation. From the 21st to the close of the month it was unusually sultry and the minimum at Fresno did not go below 73°. No similar period of heat with such duration is found in the 26 years of record. Two cases of sunstroke were reported in the press, although cases of this kind had been practically unknown hitherto.